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Independent Cellular Services Association

Box 2171, Gaithersburg, Maryland 20886 ; E-Mail ICESA@Bigfoot.Com; 301 523-5187

April 6, 1998

FCC MAIL ROOM

Magalie Roman Salas, Secretary
Federal Communications Commission
1919 M Street, N. W. - Room 222
Washington, D. C. 20554

In Re: CC Docket Nos. 92-115, 94-46/& 93-116
Notice of Ex Parte Letter

Dear Ms. Salas:

Pursuant to Section 1.1206(b)(2) of the Commission's Rules and Regulations, ICESA, CellTek and MTC Communications (petitions for reconsideration in the above-reference proceeding) hereby give notice of a written ex parte submission to Messrs. David Means and Julius Knapp of the FCC.

This is a follow-up letter to a meeting held on March 6, 1998 with the staff of the Office of Engineering and Technology of the FCC Laboratory regarding the noncompliance of a number of cellular telephones.

Sincerely,



Michael G. Heavener
Vice-President
For CellTek and MTC Communications

Attachments

Independent Cellular Services Association

Box 2171, Gaithersburg, Maryland 20886 ; E-Mail ICSA@Bigfoot.Com; 301 523-5187

April 6, 1998

Mr. David L. Means
Acting Chief
FCC Laboratory
7435 Oakland Mills Road
Columbia, Maryland 21046

Dear David:

Thank you, Charles, and Frank for meeting with us on March 6, 1998 regarding our Ex Parte presentation on the ESN rule in Section 22.919. We were pleased with your objectivity and interest in our point of view. We believe that we proved that several major manufacturers have not met the key parts of 22.919 and continue to produce phones that can be cloned in seconds. This letter is a follow-up to our meeting.

In summary, we showed five(5) cellular phones marketed by four(4) firms that were type accepted after January 1, 1995, each of which was able to have its ESN modified and continued to operate, in violation of FCC Rule Section 22.919. Also this is apparently in contradiction to representations made by the manufacturers in their type acceptance applications. We changed the ESNs in 4 of the phones in seconds using a programmer that was borrowed for the demonstration from one of the manufacturers of these devices. Thereafter, it was returned. We did not have access to the equipment needed to demonstrate the noncompliance of the Ericsson AF738 during our meeting. We sent it away to another company and its ESN has now been changed and it too continues to work. The phone is available for your inspection upon request. There are additional phones and manufacturers which we believe we could add to the sample group that we showed you. We continue to research makes of phones that do not meet the rules.

We have obtained the certification pages from Toshiba/Audiovox and Ericsson. As you know two Motorola files have not yet been found. We are most interested in them since these two phones are among the best selling units in the market. We ask that you please advise us if you locate these files. If you don't, please request replacement copies from Motorola. ITS has a standing order to copy these pages for us. At this time we are only seeking to view and copy those portions of the files that contain certification of compliance with FCC Rule Section 22.919. We do not believe those portions of the files are subject to confidentiality, but if they are please inform us. We can prepare and submit under separate cover a FOIA request for these documents.

After our meeting we obtained a copy of the Cellular Telephone Industry Association's (CTIA's) own certification standard. The guidelines to receive their "good housekeeping seal of approval", which appears on various literature, is very similar to your rules. Manufacturers pay CTIA to have their equipment evaluated. We have attached two pages from paragraph 3.3.2 which is titled "Security Requirements", which became effective April 15, 1992. CTIA has no testing procedure for this critical requirement and apparently relies solely on the word of the manufacturer. With all of CTIA's so-called emphasis on ESN Security, which includes about two dozen civil lawsuits against extension firms, we are shocked to find that they have overlooked this critical process within their own certification process program. Apparently, the desire to have low-cost phones really out weighs the need to eliminate fraud or they plan to enter the extension market once they force the independents out of business.

The cellular industry clearly knows that the phones such as those made by Motorola, can be easily cloned because they are the sponsors of the S. 493 and H.R. 2460, which outlaw in many cases the programming device we showed you and your colleagues. Certainly, the industry is aware of these programmers capable of quickly changing the ESN. They cited the ads, found in Attachment 8 from our January 23, 1998 letter to Chairman Kennard, before the House Judiciary Committee. We believe that it is very clear that the phones we showed you violate Section 22.919 in the following areas:

1. "The ESN must be isolated from fraudulent contact and tampering."
2. "The ESN must be factory set and must not be alterable, transferable, removable or otherwise able to be manipulated."
3. "Any attempt to remove, tamper with, or change the ESN chip, its logic system, or firmware originally programmed by the manufacturer must render the mobile transmitter inoperative."

Today's cellular phones can be cloned easily and quickly because the manufacturers use multiple read/write memory. This enables a phone to be cloned not just once, but many times. The original GE car phone we showed you used a "write once" ESN memory chip. The data was also encrypted such that the technology is well beyond the capability of the majority of criminals to access or manipulate. We also explained that Nokia phones cannot readily have the ESN changed and we believe their phones meet 22.919. If you refer again to Attachment 8 you will note that none of 8 ads offer any hardware or software to reprogram Nokia phones, yet all have ads for Motorola, since they are so easy to clone. Also, these Nokia phones do not have their data lines conveniently brought to an outside plug. We mention this not as an endorsement of a particular brand, but rather as evidence that it is possible to make a virtually tamper-proof cellular phone.

CTIA and some of the manufacturers have tried to put a spin on this problem by claiming that the post-1995 cellular phones were compliant with Section 22.919 when introduced, but cloners have gotten more sophisticated in figuring out ways to overcome the manufacturer's ESN protection. The facts do not support this theory. Two of the phones we demonstrated

were susceptible to ESN modification using a programmer that existed prior to their type acceptance dates. In other cases, the programming tools were available within months. While we don't develop these tools, we suspect that the developers wait to see if the phone is popular and sells well before they make a big investment in code development. Section 22.919 does not have any time period for ESN protection mentioned in the rule. Moreover, in most cases the noncompliance has less to do with the skills of the firm making the programming device but with the design of the phone itself. As stated "the ESN must be isolated" or "its electrical connections must not be accessible". The models we showed you, for example, did not comply with the requirement of Section 22.919 that "the ESN must be isolated" or "that its electrical connections not be accessible" – either that, or we are witnessing a truly scientific miracle: biomechanical growth!!!

We remind you that our primary goal is to provide a competitive alternative for cellular extension phones, subject to reasonable safeguards to protect against fraud. The cellular carriers have used Section 22.919 as a weapon, however, to block any such competition. Section 22.919 was intended as an anti-fraud measure, but is clear that it has had no impact on true cellular cloning fraud. It is inequitable, and possibly illegal, for the Commission to continue to allow this rule to be used to thwart competition with the carriers, while allowing the carriers and manufacturers at the same time to ignore the rule. Accordingly, we respectfully ask that the Commission withdraw type acceptance from those units that do not comply with Section 22.919 of the Rules. Furthermore, it is apparent that the violations are so serious that the phones that are in violation should be recalled. As claimed by CTIA in its lawsuits against extension phone firms, phones that do not meet 22.919 are illegal transmitters (this is a matter of record). The phones demonstrated to you do not meet 22.919.

Again thank you for meeting with Bob, Ron and myself.

Sincerely,



M. G. Heavener
Vice-President
For MTC Communications & CellTek

cc Mr. Julius Knapp

Attachments

Representative List of Potentially Noncompliant Cell Phones

Manufacturer	Model	ESN	FCC ID	Type Acc. Appl.	Type Acc. Grant
Audiovox	MVX - 460	8A4E6F48	CJ6DCE30248A	Nov 1995	Jan 1996
Motorola	StarTac	E07F6D40	IHDT5VG1	Jul 1995	Dec 1995
Motorola	DPC 650	D55B1380	IHDT5UV1	May 1996	May 1996
Radio Shack	CT-500	D5C18B4F	AA017-1071	Jun 1996	Aug 1996
Ericsson	AF738	9D2FEQAA	AXATR-358-A2	Aug 1996	Sep 1996

Notes:

1. The above is only a representative list of potentially noncompliant phones. We have identified others and believe there are many more we have not yet identified.
2. The ESN has been modified in each of the above-listed units, except the Ericsson. The modification of these cell phones was done solely for experimental and demonstration purposes. None of the listed units has a valid MIN programmed into it, and none of the altered units has been or can be used to access the cellular service of a carrier. These units are therefore not in violation of either Maryland law or FCC Rule Section 22.919, as discussed in note 3.
3. Article 27, Section 557D, of the Maryland Code prohibits the possession or use of a cloned wireless telephone. For purposes of that prohibition: "Clone" means to convert a wireless telephone with the Electronic Serial Number and the Wireless Telephone Number obtained from a registered wireless telephone without the consent of the service provider." In preparing each of the above phones for demonstration purposes, an invalid MIN was used. Accordingly, since none of these units has been reprogrammed with both the ESN and the MIN of a registered unit (and therefore can not access the cellular service) none of these units is a clone within the meaning of Maryland law. The use of an invalid MIN also avoids violation of FCC Rule Section 22.919 even if it is assumed that one or more of the ESNs programmed into the above phones is non-unique. Section 22.919(a) requires that "[e]ach mobile transmitter in service must have a unique ESN." 47 C.F.R. § 22.919(a) (emphasis added). The invalid MIN prevents the altered units from accessing the cellular service of any carrier, and the phones thus are not "in service" and are beyond the scope of 22.919(a).



- 2.) IS-55-A Dual-Mode TDMA Mobile Stations, "Recommended Minimum Performance Standards of 800 MHz Dual-Mode Mobile Stations"
- 3.) IS-90 Dual-Mode NAMPS Mobile Stations, "Recommended Minimum Standards for 800-MHz Dual-Mode Narrowband Analog Cellular Subscriber Units"
- 4.) Additionally, mobile stations must comply with the latest revision of compatibility standards, currently IS-54-B for Dual-Mode TDMA units, EIA/TIA-553 for AMPS units and IS-91 for Dual-Mode NAMPS units.

3.3.1.2 Certification Test Plans

Detailed laboratory test procedures and technical requirements for certification are contained in the following documents. Please see the appropriate test plan for a detailed description of each electrical parametric test performed.

- 1.) Test Plan for 800 MHz AMPS/TDMA Dual Mode Cellular Subscriber Stations
- 2.) Test Plan for 800 MHz AMPS/NAMPS Dual Mode Cellular Subscriber Stations
- 3.) Test Plan for 800 MHz AMPS Analog Cellular Subscriber Stations

3.3.1.3 EMI/EMC Requirements Waiver

In order to minimize certification costs to the manufacturer, CTIA will accept proof of FCC type acceptance in lieu of performing the EMI/EMC tests described in the test plans. This proof will consist of a copy of the FCC Type Acceptance application and proof that an FCC ID number has been assigned to the mobile station. If no such proof is provided, CTIA must perform the EMI/EMC testing at an additional cost before granting certification. See appendix C for the cost of EMI/EMC testing.

3.3.2 Security Requirements

The anti-fraud requirements, Section 3.3.2.1 generated for this Test Requirements Document became effective April 15, 1992.

3.3.2.1 ESN/Firmware Requirements

- 3.3.2.1.1 The ESN shall be factory set and shall not be alterable, capable of duplication or removable outside of a manufacturer owned facility.¹ Any attempt to remove, tamper with, or change the ESN host component or

¹The manufacturer shall be responsible for the security of its facilities.



operating system as originally programmed by the manufacturer shall render the mobile station inoperative.

3.3.2.1.2 Where a dedicated ESN device is utilized, it must be permanently² attached to the device that reads the ESN and the path to the device must be secured. The device shall not be removable and its pins shall not be accessible.

3.3.2.1.3 Where the ESN resides with other memory, the encoding technique shall include multiplication or division by a polynomial, cyclic coding, or the spreading of ESN bits over non-sequential memory locations.

3.3.2.1.4 Unauthorized alteration of the unit's operating software shall render the unit inoperable.

3.3.2.2 Authentication Requirement

Effective February 1, 1996 subscriber authentication in compliance with IS-91 and IS-54 will be a CTIA Certification requirement.

3.3.3 Safety Requirements

The safety of cellular phone users is of principal concern to wireless service providers. The following requirements must be met prior to certification.

3.3.3.1 Hands-Free Requirement

Any mobile station that is designed and marketed for use in an automobile must be equipped with "hands-free" operation as standard equipment. Any conversion apparatus that changes a mobile station from portable or transportable to automotive use must include as standard equipment all necessary items for "hands-free" operation.

3.3.3.2 Safety Documentation

The TIA Ad Hoc Labeling committee has prepared uniform language for manufacturers that accurately provides customers information on the safe use of their cellular phones. Effective February 1, 1996 manufacturers **must** certify that all production units shipped will include the complete TIA Health/Safety language, as adopted in the TIA Labeling Final Text, dated April 24, 1995³. The certification shall consist of:

²Permanently is defined as potted, epoxied, or soldered.

³This text refers to analog units only. Language for digital units is currently being adopted by the labeling committee and must be adhered to once in place.

Attachment A

**PUBLIC NOTICE
FEDERAL COMMUNICATIONS COMMISSION
Common Carrier Public Mobile Services Information
October 2, 1991
Report No. CL-92-3**

**CHANGING ELECTRONIC SERIAL NUMBERS ON CELLULAR PHONES IS A
VIOLATION OF THE COMMISSION'S RULES**

It has come to the attention of the Mobile Services Division that individuals and companies may be altering the Electronic Serial Number (ESN) on cellular phones. Paragraph 2.3.2 in OST Bulletin No. 53, Cellular System Mobile Station - Land Station Compatibility Specification, July, 1983, states that "[a]ttempts to change the serial number circuitry should render the mobile station inoperable." The 1981 edition of these compatibility specifications (which contains the same wording) was included as Appendix D in CC Docket 79-318 and is incorporated into Section 22.915 of the Commission's rules.

Phones with altered ESNs do not comply with the Commission's rules and any individual or company operating such phones or performing such alterations is in violation of Section 22.915 of the Commission's rules and could be subject to appropriate enforcement action.

Questions concerning this Public Notice should be addressed to Steve Markendorff at 202-653-5560 or Andrew Nachby at 202-632-6450.

- FCC -

FCC Rule Section 22.919
47 C.F.R. § 22.919

Electronic serial numbers. - The Electronic Serial Number (ESN) is a 32 bit binary number that uniquely identifies a cellular mobile transmitter to any cellular system.

- (a) Each mobile transmitter in service must have a unique ESN.
- (b) The ESN host component must be permanently attached to a main circuit board of the mobile transmitter and the integrity of the unit's operating software must not be alterable. The ESN must be isolated from fraudulent contact and tampering. If the ESN host component does not contain other information, that component must not be removable, and its electrical connections must not be accessible. If the ESN host component contains other information, the ESN must be encoded using one or more of the following techniques:
 - (1) Multiplication or division by a polynomial;
 - (2) Cyclic coding;
 - (3) The spreading of ESN bits over various non-sequential memory locations.
- (c) The ESN must be factory set and must not be alterable, transferable, removable or otherwise able to be manipulated. Cellular mobile equipment must be designed such that any attempt to remove, tamper with, or change the ESN chip, its logic system, or firmware originally programmed by the manufacturer will render the mobile transmitter inoperative.

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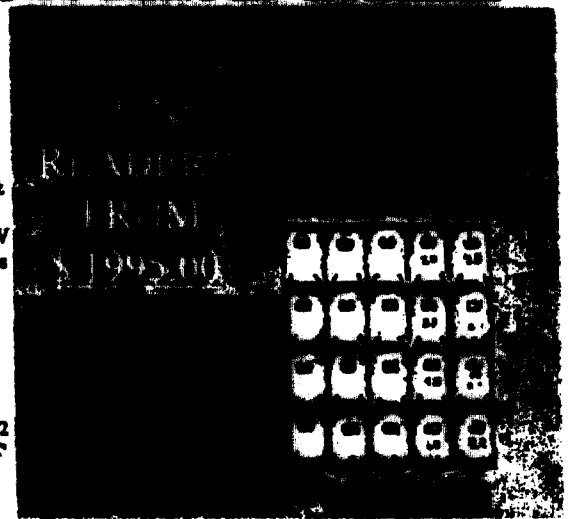
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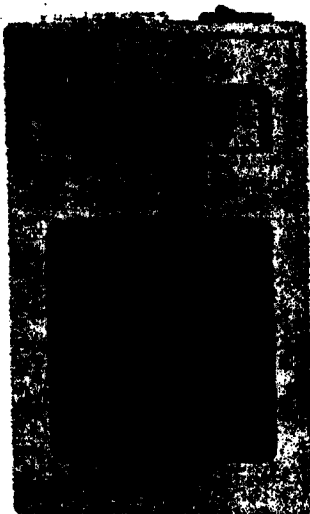
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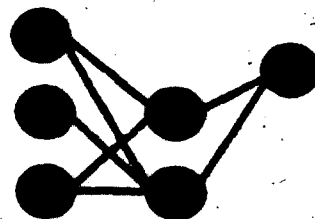
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MOTOROLA 'S NEW StarTAC(tm) WEARABLE CELLULAR TELEPHONE INCORPORATES NEW ...
Navigation Bar

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**MOTOROLA'S NEW StarTACTM WEARABLE CELLULAR TELEPHONE INCORPORATES NEW
FRAUD-FIGHTING AUTHENTICATION TECHNOLOGY**

LIBERTYVILLE, Ill. - January 3, 1996 - Motorola's StarTAC wearable cellular telephone, the world's smallest and lightest at a mere 3.1 ounces, incorporates a variety of exciting new features and an incredible new design. However, one of the most important features of this new model is that it is authentication ready. Authentication is the process by which information is exchanged between a cellular phone and the cellular network to confirm the identity of the cellular phone. The StarTAC phone's authentication-readiness helps to combat the increasing problem of phone fraud.

"The cellular industry has been faced with a sharp increase in the number of phone fraud cases over the last few years," said Robert N. Weisshappel, executive vice president and general manager of Motorola's Cellular Subscriber Group. "With the industry standardization of this new technology, Motorola is able to be the first to market cellular phones offering increased protection from fraud. And we expect Motorola's multi-million dollar investment in authentication will reduce the number of fraudulent claims cellular service providers face on a daily basis."

Motorola's Cellular Subscriber Group incorporated authentication across its product portfolio of personal, portable, transportable and mobile cellular phones manufactured for its U.S. distribution channels. Anyone concerned about potential cellular phone fraud can buy authentication ready units today. Consumers should contact their local cellular service provider to determine the availability of authentication, as the authentication feature only works in authenticating networks. Motorola has been shipping authentication ready units since August, 1995.

According to the Cellular Telecommunications Industry Association (CTIA), in 1994, the cellular industry lost \$482 million - \$1.32 million daily - due to fraud. That's up from \$365 million the previous year.

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Last Updated: May 25, 1996